AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Original) A soluble metal oxide comprising:

one or more metal oxide crystallite particles;

each crystallite particle comprising a plurality of metal and oxygen moieties;

an inner organic binding group attached to at least one metal moiety; and

an outer organic binding group attached to at least one inner organic binding group.

2. (Original) A soluble metal oxide as claimed in claim 1 wherein each crystallite particle further comprises at least one hydroxyl group.

3. (Currently Amended) A soluble metal oxide as claimed in ~~Claims 1 or 2~~claim 1 wherein;

each inner organic binding group is attached to each metal moiety by a covalent bond; and

each outer organic binding group is attached to each inner organic binding group by a hydrogen bond.

4. (Currently Amended) A soluble metal oxide as claimed in ~~claims 1 to 3~~claim 1 of the general formula:

$[\{[MO_m]_n(OH)_p\}X_q/Y_r]/(H_2O)_s$

wherein:

M represents a metal moiety

O represents an oxygen moiety

m is a variable dependent on the oxidation state of the metal moiety (M) and is in the region of between 1 and 3

n represents the number of metal oxides in the crystallite particle

OH represents an hydroxyl group

X represents an inner organic binding group

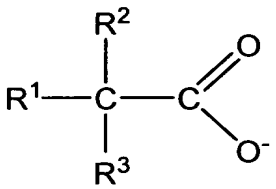
Y represents an outer organic binding group

H_2O represents hydrogen bonded water

p, q, r and s represent variables dependent in particular on the number of metal oxides in the crystallite particle (n), and reaction conditions.

5. (Original) A soluble metal oxide as claimed in claim 4,

Wherein X represents the inner organic binding group of the general formula,



Wherein:

R^1 = an organic group, a halo-organic group, a hydrogen or a halogen;

R^2 = an organic group, a halo-organic group, a hydrogen or a halogen; and

R^3 = an organic group, a halo-organic group, a hydrogen or a halogen.

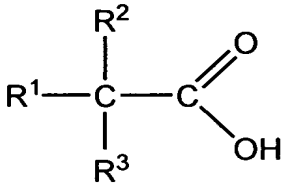
6. (Original) A soluble metal oxide as claimed in Claim 5, wherein

R^1 represents a straight-chain, branched chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen;

R^2 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen; and

R^3 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen.

7. (Currently Amended) A soluble metal oxide as claimed in ~~claims 4 to 6~~claim 4wherein Y represents the outer organic binding group of the general formula:



Wherein:

R^1 = an organic group, a halo-organic group, a hydrogen or a halogen;

R^2 = an organic group, a halo-organic group, a hydrogen or a halogen; and

R^3 = an organic group, a halo-organic group, a hydrogen or a halogen.

8. (Original) A soluble metal oxide as claimed in Claim 7, wherein

R^1 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen;

R^2 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen; and

R^3 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen.

9. (Currently Amended) A soluble metal oxide as claimed in ~~any preceding claim~~claim 1 wherein each metal oxide crystallite particle is a nanocrystallite particle having an average particle size in the range of between 5 and 100 Å.

10. (Currently Amended) A soluble metal oxide as claimed in ~~any preceding claim~~claim 1 wherein the metal moiety is selected from the group comprising one of tin and titanium.

11. (Currently Amended) A soluble mixed metal oxide comprising:

the soluble metal oxide as claimed in ~~claims 1 or 2~~claim 1 wherein each crystallite particle further comprises:

at least one metal ion attached to each crystallite particle.

12. (Original) A soluble mixed metal oxide as claimed in claim 11, wherein:

each inner organic binding group is attached to either a metal moiety or to both a metal moiety and to a metal ion;

each outer organic binding group is attached to either a metal ion, or to an inner organic binding group, or to both a metal ion and an inner organic binding group; and

wherein the metal ions are attached to any combination of the following:

an oxygen moiety;

an hydroxyl group;

an inner organic binding group; and

an outer organic binding group.

13. (Original) A soluble mixed metal oxide as claimed in claim 12 wherein:

each inner organic binding group is attached to each metal moiety by a covalent bond and to each metal ion by either a covalent bond or a donor bond;

each outer organic binding group is attached to each inner organic binding group by a hydrogen bond and to each metal ion by either a covalent bond or a donor bond; and

each metal ion is attached to each oxygen moiety by a covalent bond, to each hydroxyl group by either a donor bond or a covalent bond, to each inner organic binding group by either a covalent or a donor bond, and to each outer organic binding group by either a covalent or a donor bond.

14. (Currently Amended) A soluble mixed metal oxide as claimed in ~~claims 11 to 13~~claim 11 of the general formula:

$[\{[MO_m]_n(OH)_p\}M'_cX_qY_r]/(H_2O)_s$

M represents a metal moiety

O represents an oxygen moiety

m is a variable dependent on the oxidation state of the metal moiety (M) and is in the region of between 1 and 3

n represents the number of metal oxides in the crystallite particle

OH represents an hydroxyl group

M' represents a metal ion

X represents an inner organic binding group

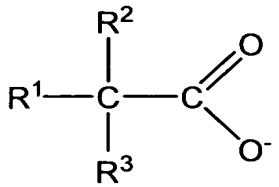
Y represents an outer organic binding group

H_2O represents hydrogen bonded water

p, q, r and s represent variables dependent in particular on the number of metal oxides in the crystallite particle (n), and reaction conditions.

15. (Original) A soluble mixed metal oxide as claimed in claim 14 wherein the metal ion (M') is selected from the group comprising of tetravalent tin, divalent tin, tetravalent titanium, divalent titanium, indium, antimony, zinc, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, zirconium, molybdenum, palladium, iridium and magnesium.

16. (Currently Amended) A soluble mixed metal oxide as claimed in ~~claims 14 or 15~~claim 14, wherein X represents the inner organic binding group of the general formula:



Wherein:

R^1 = an organic group, a halo-organic group, a hydrogen or a halogen;

R^2 = an organic group, a halo-organic group, a hydrogen or a halogen; and

R^3 = an organic group, a halo-organic group, a hydrogen or a halogen.

17. (Original) A soluble mixed metal oxide as claimed in Claim 16, wherein

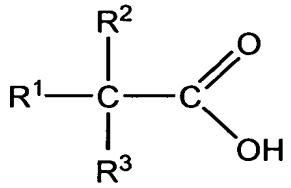
R^1 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 40 halogen atoms, a hydrogen or a halogen;

R^2 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 40 halogen atoms, a hydrogen or a halogen; and

R^3 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 40 halogen atoms, a hydrogen or a halogen;

18. (Currently Amended) A soluble mixed metal oxide as claimed in ~~claims 14 to 17~~claim 14

wherein Y represents the outer organic binding group of the general formula.



Wherein:

R^1 = an organic group, a halo-organic group, a hydrogen or a halogen;

R^2 = an organic group, a halo-organic group, a hydrogen or a halogen; and

R^3 = an organic group, a halo-organic group, a hydrogen or a halogen.

19. (Original) A soluble mixed metal oxide as claimed in claim 18, wherein:

R^1 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen;

R^2 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen; and

R^3 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen;

20. (Currently Amended) A soluble mixed metal oxide as claimed in ~~claims 11 to 19~~claim 11 wherein each crystallite particle is a nanocrystallite particle having an average particle size in the range of between 5 and 100 Å.

21. (Currently Amended) A soluble mixed metal oxide as claimed in ~~claims 11 to 20~~claim 11 wherein the metal moiety is selected from the group comprising one of tin and titanium.

22. (Original) A process for preparing a metal oxide solution comprising:

adding an amount of insoluble hydrous metal oxide to an amount of organic acid to provide a metal oxide suspension;

heating the suspension until the suspension forms a solution; wherein

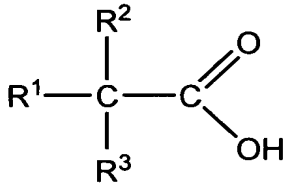
the insoluble hydrous metal oxide is added to a sufficient amount of organic acid to allow a solution to be formed during heating.

23. (Original) A process for preparing a soluble metal oxide comprising:

preparing a metal oxide solution by the process as claimed in claim 22; and

removing the organic acid from the solution to provide the soluble metal oxide.

24. (Currently Amended) A process as claimed in ~~claims 22 or 23~~claim 22 wherein the acid is formic acid or is of the general formula:



Wherein:

R^1 = an organic group, a halo-organic group, a hydrogen or a halogen;

R^2 = an organic group, a halo-organic group, a hydrogen or a halogen; and

R^3 = an organic group, a halo-organic group, a hydrogen or a halogen.

25. (Original) A process as claimed in claim 24 wherein:

R^1 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen;

R^2 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen; and

R^3 represents a straight-chain, branched-chain or cyclic organic group with up to 20 carbons, a straight-chain, branched-chain, or cyclic halo-organic group with up to 20 carbons and up to 41 halogen atoms, a hydrogen or a halogen.

26. (Original) A process for preparing a mixed metal oxide solution comprising:

preparing a metal oxide solution by the process, as claimed in claim 22;

adding a metal to the solution; and

filtering the solution.

27. (Original) A process for preparing a soluble mixed metal oxide comprising:

preparing a mixed metal oxide solution by the process as claimed in claim 26; and

removing the organic acid to provide the soluble mixed metal oxide.

28. (Currently Amended) A process for preparing a mixed metal oxide solution comprising:

preparing a soluble metal oxide by the process as claimed in ~~any of claims 23 to 25~~claim 23;

dissolving the metal oxide in a solvent to provide a solution;

adding a metal to the solution; and

filtering the solution.

29. (Original) A process for preparing a soluble mixed metal oxide comprising:

preparing a mixed metal oxide solution by the process as claimed in claim 28; and

removing the solvent to provide the soluble mixed metal oxide.

30. (Currently Amended) A process as claimed in ~~claims 26 to 29~~claim 26 wherein:

prior to filtering the solution;

the solution is heated.

31. (Currently Amended) A process as claimed in ~~claims 26 to 30~~claim 26 wherein;

the metal is added in powder form.

32. (Original) A process for preparing a soluble metal oxide suitable for dissolving in a target organic solvent comprising:

selecting the target solvent;

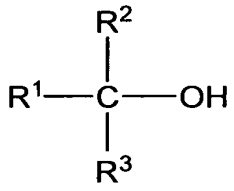
determining an organic binding group which when attached to an insoluble metal oxide would allow the metal oxide to dissolve in the target solvent;

selecting an organic acid suitable for providing the organic binding group; and

preparing the soluble metal oxide using the selected organic acid.

33. (Original) A metal oxide solution prepared by the process as claimed in claim 22.

34. (Currently Amended) A metal oxide solution comprising a soluble metal oxide as claimed in ~~claims 1 to 10~~claim 1 and a solvent comprising one or more of tetrahydrofuran, dimethylformamide, dimethyl sulphoxide, ethyl acetate, amyl acetate, pyridine, water, an alcohol having the general formula:



Where R^1, R^2 and R^3 represent one of:

$R^1 = R^2 = R^3 = H$

$R^1 = R^2 = H$; $R^3 = (CH)_nCH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = H$; $R^2 = R^3 = CH_3$

$R^1 = H$; $R^2 = CH_3$; $R^3 = CH_2CH_3$

$R^1 = R^2 = R^3 = CH_3$

an ether having the general formula R^1-O-R^2

Where R^1 and R^2 represent one of:

$R^1 = R^2 = CH_2CH_3$

$R^1 = CH_3$; $R^2 = CH_2CH_3$

$R^1 = R^2 = (CH_2)_3CH_3$; and

A ketone having the general formula R^1COR^2

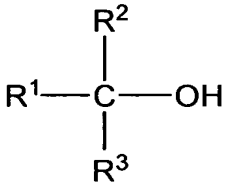
Where R^1 and R^2 represent one of:

$R^1 = R^2 = (CH_2)_n CH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = CH_3$; $R^2 = CH_2CH_3$

35. (Currently Amended) A mixed metal oxide solution prepared by the process as claimed in ~~claims 26 or 28~~claim 26.

36. (Currently Amended) A mixed metal oxide solution comprising a soluble mixed metal oxide as claimed in ~~claims 11 to 21~~claim 11 and a solvent comprising one or more of tetrahydrofuran, dimethylformamide, dimethyl sulphoxide, ethyl acetate, amyl acetate, pyridine, water, an alcohol having the general formula:



Where R^1, R^2 and R^3 represent one of:

$R^1 = R^2 = R^3 = H$

$R^1 = R^2 = H$; $R^3 = (CH)_nCH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = H$; $R^2 = R^3 = CH_3$

$R^1 = H$; $R^2 = CH_3$; $R^3 = CH_2CH_3$

$R^1 = R^2 = R^3 = CH_3$

an ether having the general formula R^1-O-R^2

Where R^1 and R^2 represent one of:

$R^1 = R^2 = CH_2CH_3$

$R^1 = CH_3$; $R^2 = CH_2CH_3$

$R^1 = R^2 = (CH_2)_3CH_3$; and

A ketone having the general formula R^1COR^2

Where R^1 and R^2 represent one of:

$R^1 = R^2 = (CH_2)_n CH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = CH_3$; $R^2 = CH_2CH_3$

37. (Currently Amended) A metal oxide film formed from the solution as claimed in ~~claims 33 or 34~~claim 33.

38. (Currently Amended) A mixed metal oxide film formed from the solution as claimed in ~~claims 35 or 36~~claim 35.

39. (Currently Amended) Use of a soluble metal oxide as claimed in ~~claims 1 to 10~~claim 1 as a catalyst.

40. (Currently Amended) Use of a metal oxide solution as claimed in ~~claims 33 or 34~~claim 33 as a catalyst.

41. (Currently Amended) Use of a soluble mixed metal oxide as claimed in ~~claims 11 to 21~~claim 11 as a catalyst.

42. (Currently Amended) Use of a mixed metal oxide solution as claimed in ~~claims 35 or 36~~claim 35 as a catalyst.

43. (Original) A process for modifying the solubility of a soluble metal oxide comprising:

heating the soluble metal oxide to a temperature not greater than 300°C to provide an insoluble metal oxide;

adding an amount of the insoluble metal oxide to an amount of organic acid to provide a metal oxide suspension;

heating the metal oxide suspension until the suspension forms a solution; and

removing the acid to provide a soluble metal oxide having modified solubility; wherein

the insoluble hydrous metal oxide is added to a sufficient amount of organic acid to allow a solution to be formed during heating.

44. (Original) A process for modifying the solubility of a soluble metal oxide comprising;

adding an amount of soluble metal oxide to an excess amount of organic solvent to form a metal oxide solution;

adding acid drop wise to the solution; and

removing the organic solvent to provide a soluble metal oxide having modified solubility.

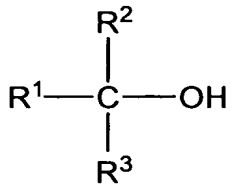
45. (Original) A process for modifying the solubility of a soluble metal oxide as claimed in claim 44 wherein:

the acid is selected from the group comprising one of orthophosphoric acid, phosphorous acid, hypophosphorous, organophosphonic acids and organophosphinic acids, organoarsonic and organoarsinic acids, and sulphonic acids.

46. (Original) A process for modifying the solubility of a soluble metal oxide as claimed in claim 44 wherein:

the acid is replaced with a non-acid selected from the group comprising one of 8-hydroxyquinoline, polyethylene glycol or any non-acid which is capable of hydrogen bonding.

47. (Currently Amended) A process for modifying the solubility of a soluble metal oxide as claimed in ~~claims 44 to 46~~claim 44 wherein the organic solvent is selected from the group comprising of tetrahydrofuran, dimethylformamide, dimethyl sulphoxide, ethyl acetate, amyl acetate, pyridine, water, an alcohol having the general formula:



Where R^1, R^2 and R^3 represent one of:

$R^1 = R^2 = R^3 = H$

$R^1 = R^2 = H$; $R^3 = (CH)_nCH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = H$; $R^2 = R^3 = CH_3$

$R^1 = H$; $R^2 = CH_3$; $R^3 = CH_2CH_3$

$R^1 = R^2 = R^3 = CH_3$

an ether having the general formula R^1-O-R^2

Where R^1 and R^2 represent one of:

$R^1 = R^2 = CH_2CH_3$

$R^1 = CH_3$; $R^2 = CH_2CH_3$

$R^1 = R^2 = (CH_2)_3CH_3$; and

A ketone having the general formula R^1COR^2

Where R^1 and R^2 represent one of:

$R^1 = R^2 = (CH_2)_n\ CH_3$ (n = 0, 1, 2, 3, 4, 5)

$R^1 = CH_3$; $R^2 = CH_2CH_3$

48. (Original) A process for the extraction of tin from a mixed tin, antimony and iron ore comprising:

dissolving the ore in a mineral acid to form a mineral acid solution comprising aqueous tin, antimony and iron species;

increasing the pH of the solution to form hydrous tin antimony and iron oxides within the solution and to precipitate hydrous tin, antimony and iron oxides from solution;

adding an excess amount of organic acid to the hydrous oxides to form an organic acid suspension;

heating the suspension;

filtering the suspension; and

removing the organic acid to provide a soluble tin oxide with iron residue.

49. (Original) A process for extraction of tin from a mixed tin, antimony and iron ore as claimed in claim 48, further comprising:

dissolving the soluble tin oxide with iron residue in an organic solvent to provide a solution;

maintaining the soluble tin oxide in solution for at least 24 hours;

filtering the solution to remove the iron residue; and

removing the organic solvent to provide a soluble tin oxide.